

NewsRelease



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Successful Ground Testing Brings Hyper-X Closer to Flight

They can design planes that fly at hypersonic speeds, but NASA Langley researchers cannot slow the approach of the Hyper-X vehicle's flight date. And once Hyper-X takes off in May 2000, it will mark a series of "firsts" for this unique aircraft.

NASA is developing Hyper-X technology for aircraft and reusable space launch vehicles that would weigh less and carry more payload than conventional rocket launch systems. The full-scale Hyper-X vehicle at NASA Langley's 8-Foot High Temperature Tunnel is the first of its kind to successfully test at seven times the speed of sound or Mach 7 wind tunnel conditions. At 30,000 feet, Mach 1 is approximately 660 miles per hour.

The engine being tested is a spare flight engine of the Mach 7, Hyper-X scramjet design. A scramjet (supersonic combustion ramjet) propulsion system has no moving parts and uses the speed of the aircraft for its operation. Combustion happens when compressed air traveling at hypersonic speed ignites its hydrogen fuel. This flight design eliminates the need for onboard oxygen unlike conventional rocket systems, and the reduced weight would allow a vehicle to carry more payload. The Langley designed Hyper-X scramjet engine will mark the world's first hypersonic flight of an independent, air-breathing scramjet aircraft.

Langley manages the Hyper-X program including on-site engine and aerodynamic ground testing in several wind tunnels that provide a near replication of the flight environment. Dryden Flight Research Center in California manages the last phase of testing where actual flight research takes place; Dryden has taken delivery of the first Hyper-X (designated X-43A) research aircraft built by MicroCraft Corp.

Each Hyper-X vehicle will ride atop a booster rocket from Orbital Sciences Corp., Dulles, Va., which will be air-launched by Dryden's B-52 airplane. After being launched from the B-52, the X-43 will separate from the rocket at a predetermined altitude and velocity then fly a pre-programmed trajectory, conducting aerodynamic and propulsion experiments before it impacts into the Pacific Ocean.

Hyper-X propulsion could be a high speed, efficient means of moving aircraft through the lower atmosphere and other vehicles into space, but it has never been tested in an independent single flight vehicle design. Testing at NASA Langley will continue through the end of 1999 while two additional X-43 aircraft are being built for future flight tests. One will fly at Mach 7 and another at Mach 10 (another first at approximately 6,800 miles per hour) within 12 to 18 months after the initial Mach 7 test flight.

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(NOTE TO EDITORS: The Hyper-X program office will present at the American Institute of Aeronautics and Astronautics {AIAA} 9th International Space Planes and Hypersonic Systems and Technologies Conference and 3rd Weakly Ionized Gases Workshop at Norfolk Waterside Marriott in Norfolk, Virginia, November 1-5, 1999. On Thursday afternoon {11/4} conference attendees will take a technical tour of NASA Langley Research Center. The non-profit AIAA serves the aerospace profession with nearly 30,000 individual professional members and over 50 corporate members.

Photos and videotapes to accompany this release are available by calling the Langley Research Center, Hampton, Va., at the number listed above.)